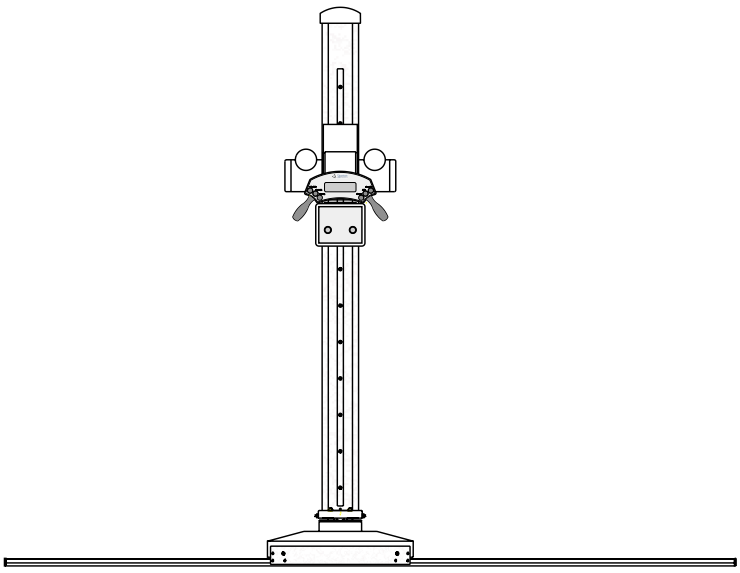
Quantum
MEDICAL IMAGING, LLC

Model QS-550

Free-Standing Tubestand

Operator's Manual



Manual Part No. DC30-008 Revision B

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Made in U.S.A.

Revision History

REVISION	DATE	TYPE OF MODIFICATION
A	12/08/00	Initial Release.
B	2/27/01	Added UL mark.

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i - iv	B				
1 - 28	B				

Revision History

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Chapter 1

SAFETY NOTICES

WARNING

Quantum Medical Imaging, LLC disclaims all responsibility from any injury resulting from improper application of this equipment.

This equipment is sold to be used exclusively under the prescribed direction of a person who is licensed by law to operate equipment of this nature. This equipment must be used in accordance with all safety procedures described in this manual and must not be used for purposes other than those described herein.

Quantum Medical Imaging, LLC cannot assume responsibility for any malfunctioning of this equipment resulting from improper operation, maintenance, or repair, or from damage or modification of its components.

Failure to observe these warnings may cause serious injuries.

X-RAY PROTECTION

X-rays are hazardous to both patient and operator unless established safe exposure factors and operating instructions are observed.

It is important that everyone having anything to do with x-radiation be properly trained and fully acquainted with the recommendations of the National Council on Radiation Protection and Measurements as published in NCRP Reports available from NCRP Publications, 7910 Woodmont Avenue, Suite 800, Bethesda, Maryland 20814-3095 (www.ncrp.com), and of the International Commission on Radiological Protection (www.icrp.org), and take adequate steps to protect against injury.

X-ray equipment may cause injury if used improperly. The instructions contained in this manual must be read and followed when operating this unit. Personal radiation monitoring and protective devices are available. You are urged to use them to protect against unnecessary x-ray exposure.

Chapter 1 Safety Notices

REGULATORY COMPLIANCE

The Model QS-550 Tubestand is not a CDRH certifiable product. However, it must be compatible and operate in conjunction with other components in the x-ray system so that the x-ray system performs in compliance with H.E.W. Performance Standards. This product has been factory tested to assure its required performance in an x-ray system.

Those responsible for the planning of x-ray equipment installations must be thoroughly familiar and comply completely with NCRP Report No. 49, "Structural Shielding Design and Evaluation for Medical Use of X-Rays and Gamma Rays of Energies up to 10 MeV", as revised or replaced in the future. Those authorized to operate, test, participate in or supervise the operation of the equipment must be thoroughly familiar and comply completely with the currently established safe exposure factors and procedures described in publications such as Subchapter J of Title 21 of the Code of Federal Regulations, "Diagnostic X-Ray Systems and Their Major Components," and NCRP Report No. 102, “Medical X-Ray, Electron Beam and Gamma Ray Protection for Energies Up to 50 MeV—Equipment Design and Use” as revised or replaced in the future.

Scheduled maintenance is essential to the assurance of continued integrity of this equipment with respect to regulatory compliance. The continuance of certified performance to the regulatory standard is incumbent upon the user's diligent conformance to recommended maintenance instructions.

This product has been classified as Class I, Type B by Underwriters Laboratories, Inc. Equipment not suitable for use in the presence of a flammable anesthetic mixture of air with oxygen or with nitrous oxide.

MEDICAL ELECTRICAL EQUIPMENT
WITH RESPECT TO ELECTRIC SHOCK, FIRE,
MECHANICAL HAZARDS ONLY
IN ACCORDANCE WITH CAN/CSA C22.2 NO. 601.1
98YA

MEDICAL ELECTRICAL EQUIPMENT
WITH RESPECT TO ELECTRIC SHOCK, FIRE,
MECHANICAL HAZARDS ONLY
IN ACCORDANCE WITH UL 2601-1
98YA

The following symbols may be used for marking on this equipment or equipment documentation:

Earth (ground)

Type B Equipment

Protective Earth (ground)

Attention, consult accompanying documents

Enable Transverse Tube Motion

Enable Longitudinal Tube Motion

Enable Tube Motion in All Directions

Enable Vertical Tube Motion

Enable Tube Angulation Motion

Enable Auto-Stop Function

Chapter 1 Safety Notices

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Chapter 2

GENERAL INFORMATION

Chapter 2 General Information

OVERVIEW

This manual provides information for installing, operating, and maintaining Quantum Medical Imaging, LLC's Free-Standing Tubestand, Model QS-550 (hereinafter referred to as the tubestand). It is imperative that all safety procedures described in this manual be strictly adhered to in order to ensure the safety of both patient and user.

NOTE

The user should read this manual in its entirety prior to using this equipment. It should be kept in a location near the equipment and readily accessible to the those that operate it.

The key features of the Model QS-550 tubestand are as follows:

- Vertical travel 60.0 inches (1524 mm), longitudinal travel 96.0 inches (2438.4 mm) using a 10' floor track
- Fail-safe electromagnetic lock for vertical tubestand motion
- Electromagnetic locks for longitudinal and angulation tubestand motions
- 40" and 72" SID indicators (metric equivalents available) on handgrips and vertical column (40") and floor track (72")
- LCD display of technique selection, time, date, tube angulation, and 40" and 72" SID wall/table tube locations
- Tube/collimator positioning handgrips provide lock release buttons for quick tube positioning
- As low as 13 inch (330.2 mm) focal spot-to-floor distance

INTENDED USE

The Free-Standing Tubestand (Model QS-550) is intended for use as a support structure used to position a diagnostic x-ray tube housing assembly for a medical radiographic procedure.

Chapter 2 General Information

MAIN COMPONENTS

See Figure 1. The Model QS-550 tubestand contains:

1 X-Ray Tube
2 Handgrips
3 Collimator
4 Floor Track
5 Base Assembly
6 Serialization Label
7 Vertical Column
8 Transverse Arm/Vertical Trolley

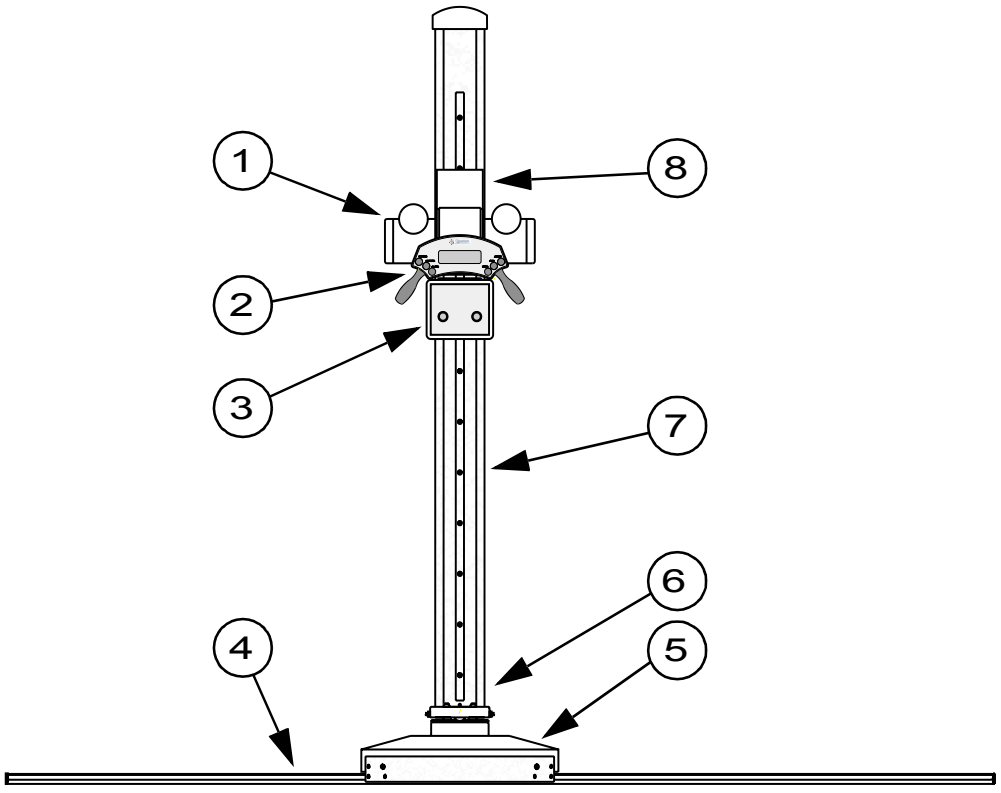

Figure 1. Free-Standing Tubestand, Model QS-550 Series

Chapter 3

OPERATION

Chapter 3 Operation

OVERVIEW

This chapter explains how to operate the tubestand. Refer to Table 1 for descriptions and functions of the tubestand's controls and indicators.

WARNING! All movable assemblies and parts of this equipment must be operated with reasonable care. Manufacturer's equipment recommendations described in this manual must be observed.

MOTIONS AND DETENTS

The tubestand provides six manual motions, with mechanical detents for each motion to aid in equipment positioning (see Figure 2):

1 Rotation of the Vertical Column (detents at 0°, 90° clockwise, and 90° counterclockwise)

2 Angulation of the X-Ray Tube/Collimator (detents at 0°, 90° clockwise, and 90° counterclockwise)

3 Vertical travel of Transverse Arm (40" SID detent)

4 Longitudinal travel (head-to-foot) of the vertical column (40" and 72" SID detents)

5 Transverse (cross-table) travel of the Tube Arm (center position detent)

6 Rotation of the tube/collimator (+40°, -20°)

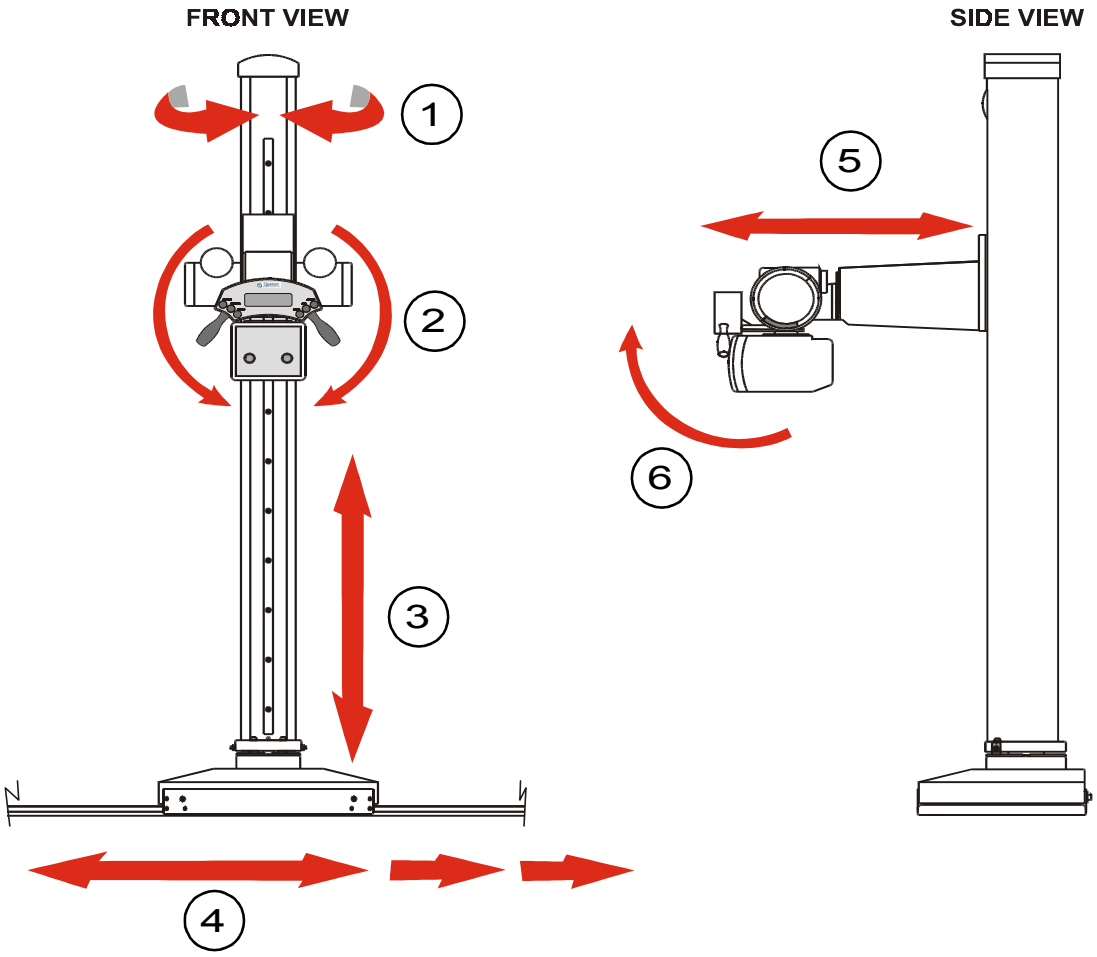

Figure 2. Model QS-550 Tubestand Motions

Item	Function	Type	Description
1	Transverse Lock Release	Control - Push button	Releases magnetic lock to allow transverse tube motion.
2	Longitudinal Lock Release	Control - Push button	Releases magnetic lock to allow tubestand longitudinal motion along floor track.
3	All Locks Release	Control - Push button	Releases all tube stand magnetic locks to allow vertical, transverse, longitudinal, and tube angulation motions.

Item	Function	Type	Description
4	Display Panel (Digital Hand-grips only)	Indicator - LCD Display	• Provides visual indication of tube head SID position relative to table receptor ("T") or wall receptor ("W"). • Indicates tube head rotation angle. • Displays the current exposure selection when x-ray generator is in anatomical programming (APR) mode.
5	Vertical Lock Release	Control - Push button	Releases magnetic lock to allow vertical tube motion.
6	Angulation Lock Release	Control - Push button	Releases magnetic lock to allow tube angulation.
7	Auto-Stop	Control - Push button	When this button is pressed along with Longitudinal Lock Release button, longitudinal movement of the vertical column stops automatically when it reaches either the 40" or 72" SID detent on floor track.
8	Tube Angulation Display	Indicator	Indicates angle of tube rotation.
9	SID at 40 in. (100 cm)	Indicator	Indicates tube and wall or table receptor is at 40 inches (100 cm) SID
10	SID at 72 in. (180 cm)	Indicator	Indicates tube and wall receptor is at 72 inches (180 cm) SID
11	Source-to-Table Receptor SID Scale	Indicator Label	Indicates distance from tube focal spot-to-table image receptor (in either metric or SAE units)
12	Source-to-Table Top SID Scale	Indicator - Label	Indicates distance from tube focal spot-to-table top (in either metric or SAE units)
13	SID at 100 cm or 40 in. and 180 cm or 72 in. markers	Indicator - Label	Indicates SID is at 100 cm or 40 inches (wall stand or table receptor) or at 180 cm or 72 inches (wall stand receptor only).
14	Trunnion Rotation Scale	Indicator - Label	Indicates rotation angle of tube when system is equipped with optional trunnion-mounted x-ray tube.

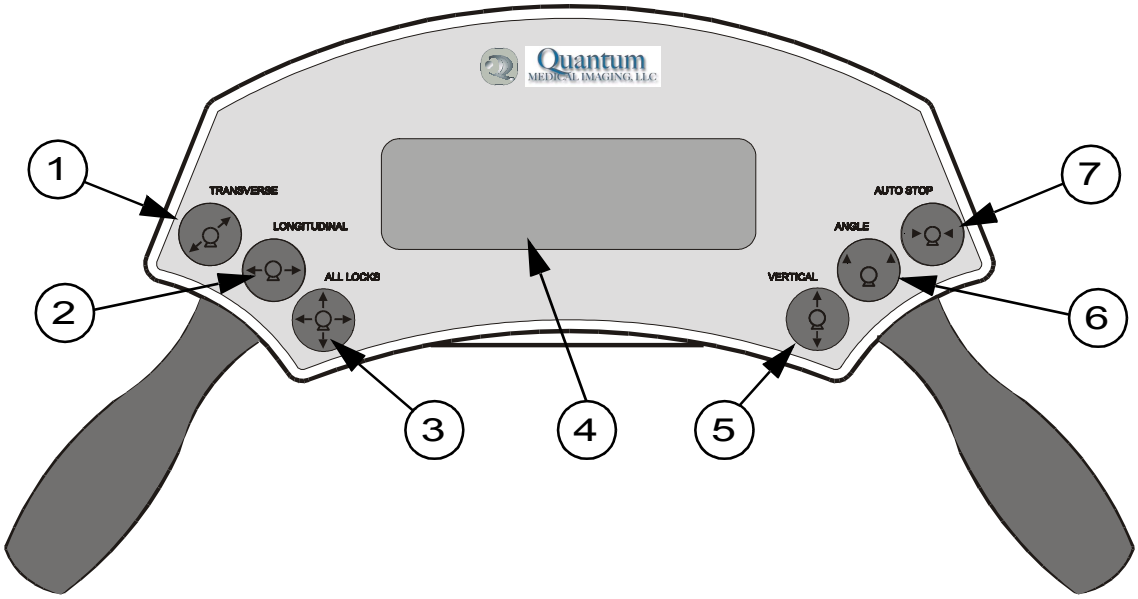

Figure 3. Tubestand Controls and Indicators (Digital Handgrips)

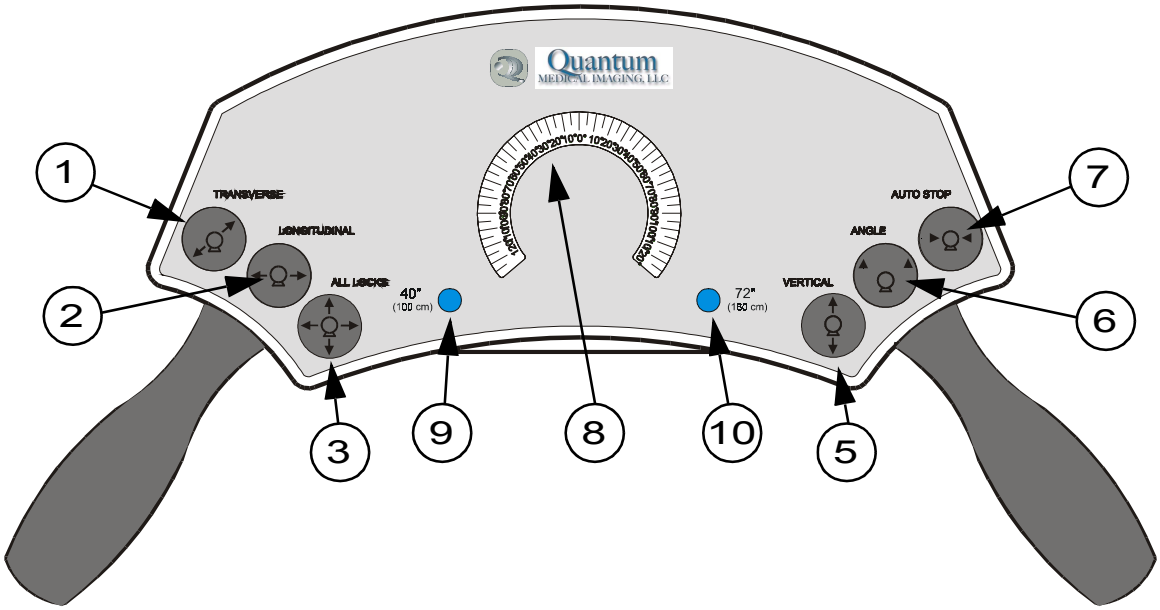

Figure 4. Tubestand Controls and Indicators (Analog Handgrips)

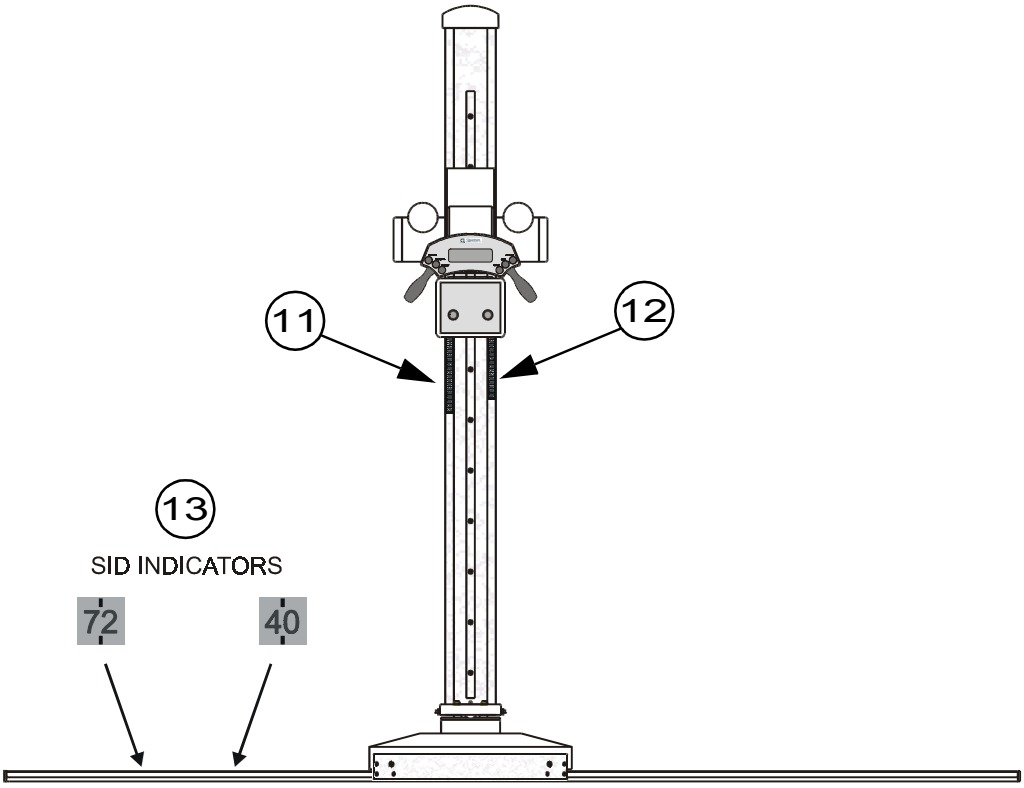

Figure 5. Tubestand Controls and Indicators (Vertical Column/Floor Track)

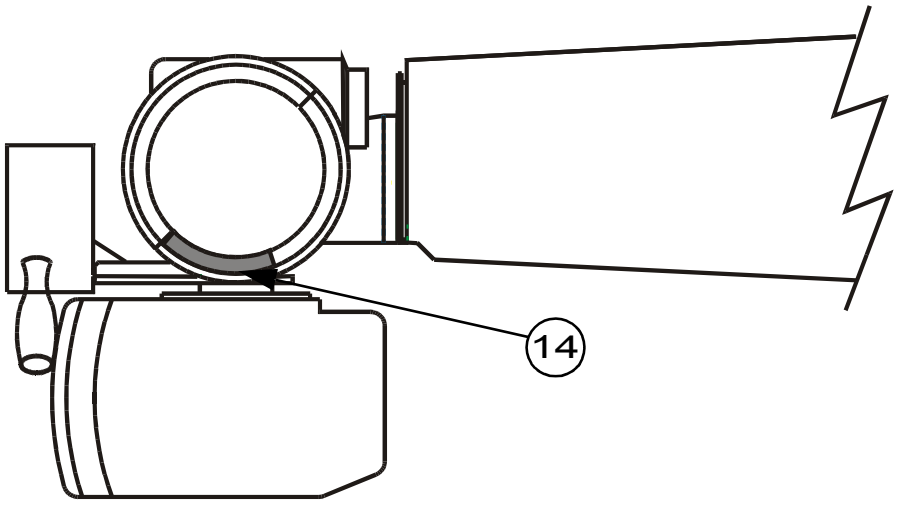

Figure 6. Tubestand Controls and Indicators (Trunnion Assembly)

Chapter 3 Operation

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Chapter 4

USER MAINTENANCE

Chapter 4 User Maintenance

OVERVIEW

This chapter is designed to assist the system user in maintaining the smooth operation of the tubestand. This product has been factory tested to assure its required performance in an x-ray system. The user is responsible for performing routine maintenance and inspection procedures to ensure proper equipment operation. Aside from routine maintenance, any abnormal noise, vibration, or unusual performance should be investigated by a qualified service representative. Preventive maintenance or any repair service should be performed only by qualified service personnel.

WARNING! Only properly trained service personnel should service or maintain this equipment. Failure to follow manufacturer's or service personnel's recommendations may result in serious injury. Failure to follow manufacturer's or service personnel's recommendations may result in serious injury.

USER MAINTENANCE

User maintenance consists of the following activities, which should be performed on a daily basis:

- Visually inspect the tubestand for wear and cleanliness
- Clean the exterior painted surfaces of the tubestand

Cleaning

The system user is responsible for the basic cleanliness of the equipment. Painted metal surfaces should be cleaned using a clean cloth slightly moistened in warm soapy water (use mild soap). Wipe with a clean wet cloth, then dry. Never use abrasive polish on this equipment.

WARNING! Always disconnect the equipment from the main power supply prior to any cleaning.

Chapter 4 User Maintenance

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Chapter 5

WARRANTY INFORMATION

WARRANTY STATEMENT

Quantum Medical Imaging, LLC (herein known as "QMI") warrants to buyer that any new product manufactured by QMI will be free from defects in material and manufacturing and conform substantially to applicable specifications in effect on the date of shipment when subjected to normal, proper and intended usage by properly trained personnel.

All QMI products shall be warranted for a period of 12 months from the time of original installation, the date of which will be determined by a completed, returned warranty card, which must be returned within 30 days of system installation. In no case shall the warranty exceed 15 months from the date of shipment. If the warranty card is not returned to QMI, then the warranty shall take effect 12 months from the date of shipment by Quantum Medical Imaging. Buyers should complete one (1) form per system or component, if items are ordered separately.

WARRANTY CARD

Cut along dashed line

Name of Owner _____

Name of Facility _____

Address 1 _____

Address 2 _____

City _____ **State** _____

Country _____ **Zip** _____

Phone _____

e-mail _____

Name of Distributor _____

Installation Date _____

Check Type of Equipment and Provide ID No.'s:

	Model No.:	Serial No.:
☐ Hi-Freq. Generator		
☐ Table		
☐ Collimator		
☐ HI-Tension Cable		
☐ Tube		
☐ Tube Stand		
☐ Wall Stand		
☐ Other		

Chapter 5 Warranty Information

Fill in and mail Warranty Card promptly to:

Quantum Medical Imaging, LLC
2905 Veterans Memorial Highway
Ronkonkoma, N.Y. 11779 USA

Any component furnished without charge to Buyer/Dealer during the warranty period to correct a warranty failure shall be warranted only to the extent of the unexpired term of the warranty of the original product. This warranty extends only to the original purchase and is not transferable unless authorized in writing by Quantum Medical Imaging.

Products manufactured by parties other than QMI, where QMI acts solely as distributor or reseller, will carry their respective manufacturers' warranties.

WARRANTY EXCLUSIONS

The foregoing warranties are exclusive and in lieu of all other warranties, whether written, oral, express, implied or statutory. NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. QMI Warranty is exclusive of:

1) Failure of Buyer/Dealer to prepare the site or provide power requirements or operating environmental conditions in compliance with any applicable instructions or recommendations of Quantum Medical Imaging.
2) Failure of Buyer/Dealer to provide the proper incoming power required to support the equipment in accordance with the recommendation of QMI.
3) Any modification of product performed by a party other than Quantum Medical Imaging.
4) Combining incompatible products.
5) Improper or extraordinary use of the Product, improper maintenance of the Product, or failure to comply with any applicable instructions or recommendations of Quantum Medical Imaging.
6) Misuse, tampering or, negligent storage/handling of the Product by Buyer, its employees, agents or contractors.
7) Fuses and other items deemed by QMI to be expendable.
8) Acts of God, acts of civil or military authority, fires, floods, power failure or electrical power surges, strikes or other labor disturbances, war riots or other causes beyond the reasonable control of Quantum Medical Imaging.
9) Installation, troubleshooting or repair service are not included in this warranty. Technical service and maintenance is the responsibility of the dealer selling the equipment.
10) The Manufacturer is relieved of any responsibility for damage during shipment after the freight carrier transports the unit for delivery.

BUYER'S REMEDIES

If Quantum Medical Imaging determines that any Product fails to meet any warranty during the applicable warranty periods, Quantum Medical Imaging shall correct any such failure as follows:

A) By repairing, adjusting, or replacing any defective or non-conforming Parts or Products.
B) By making available any necessary repaired or replacement parts or assemblies.

Quantum Medical Imaging shall have the option to furnish either new or exchange replacement parts or assemblies. All returned parts shall become the property of Quantum Medical Imaging.

The preceding Paragraphs set forth Buyer's Remedies and Quantum Medical Imaging's sole liability for claims based upon failure of the product to meet any warranty, whether the claim is on contract, warranty, Tort (including negligence and strict liability) or otherwise, and however instituted. And upon the expiration of the applicable warranty period, all such liability shall terminate. In no event shall Quantum Medical Imaging be liable for special or consequential damages.

The warranties and remedies available to the buyer are conditioned upon all claims under this warranty being made in accordance with the aforementioned warranty statement.

Chapter 5 Warranty Information

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